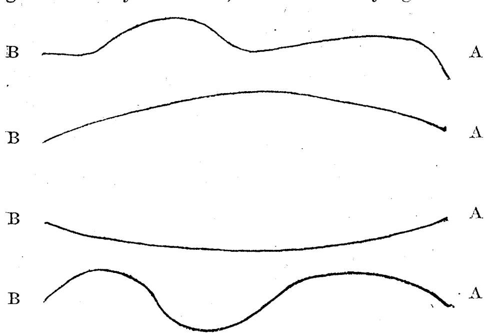
it was a fine adult male, eight feet in length, weighing very nearly one thousand pounds. The specimen was purchased by Dr. G. E. Manigault for the museum at Charleston, S.C., where it is now preserved.

That this species is prone to wander far from its usual haunts — the icefields eastward of Newfoundland and northward — is attested by its capture, not only near New-York City, but also at Cambridge, Md., in an arm of Chesapeake Bay, as recorded some twenty years ago by Professor Cope. The present record, however, is the first of the capture of a positively identified example of any seal on the New-England coast other than the common small harbor seal (Phoca vitulina). J. A. ALLEN.

Flight of the flying-fish.

On a recent trip from New York to Galveston, with the weather at the start cold and chilly, wind north-east, and ending in the Gulf with clear sunny days and summer breezes, there was every opportunity afforded for watching the flight of flying-fish. The first fish were seen two days out of New York; and on every day thereafter, save on one when off the coast of Florida, numerous brown pelicans were observed. Probably the flying-fish found the atmosphere a trifle heavy, flitting about with pelicans for interested spectators, and attended strictly to their domestic duties. The act of flying is somewhat startling, the fish emerging with much energy, and, from the very start, buzzing its wings like a humming-bird; and in no instance did the buzzing cease until the fish disappeared in the sea at the end of its flight. The longest flight observed continued, without any contact with the water, for nine seconds; estimated distance, six hundred to eight hundred feet. In some cases the flight was nearly horizontal; in most cases, however, it was arched vertically. Flying across the wind, it was noticed that contact with the water did not apparently retard the movement of the fish in the air. Some of them made four contacts before finishing the flight. The wind had some effect upon the direction and character of the flying; but fish were noticed going with the wind, and crossing it in every direction, and a few flying directly



against it; A being the starting-points; B, the end, and the line of flight being shown as it appeared from a point in a vertical plane connecting A and B.

GEORGE J. CARNEY.

Lowell, Mass.

Sun's radiation and geologic climate.

It seems to me that Mr. Warring, in his objection (SCIENCE, p. 395) to the assumption that the dissipation of solar energy from loss of heat diminishes the supply of sun-heat received by the earth, has overlooked the very important factor of the variable area of the contracting sun. To make this clear, let

Q = Quantity of heat incident normally on a unit surface in a unit of time, at the earth's distance from the sun.

R = Radiating or heat-emitting power of each physical point of the sun.

A = Area of projected surface emitting heat normally = Area of great circle of sun regarded as a sphere.

Then evidently, at a given distance, we have, Q varies as $R \times A$: hence, taking the example cited from Newcomb (as A varies directly as the square of the sun's diameter), if the temperature of the condensed gaseous mass is doubled by contraction to one-half its primitive diameter, its area (or A) would be reduced to one-fourth its original area; so that, notwithstanding the assumed augmentation of temperature of the sun, the supply of heat received by the earth (or $R \times A$) would not be increased, unless R augmented in a ratio greater than the square of the temperature. It is difficult to assign precisely what function R is of the temperature of the radiating body: some physicists (Rossetti) make it proportional to the square of the absolute temperature; while others (Stephan) make it as high as the fourth power of the absolute temperature.

JOHN LECONTE.

Sphere anemometer.

I am rather amused to see in SCIENCE, p. 228, that Dr. Sprung of Hamburg has re-invented an anemometer well known (but not used) in this country; viz., Howlett's. Dr. Sprung, and all who wish to help forwards our knowledge of wind-force, should begin by making themselves acquainted with what has already been done. In the *Quarterly journal of the meteorological society*, viii., p. 161, will be found an Historical sketch of anemometry and anemometers, by J. K. Laughton, M.A., F.R.G.S., president meteorological society, and in it will be found notices of about two hundred patterns. The full description of Howlett's is given in the *Proceedings British meteorological society*, iv., p. 161; but even Howlett was not the first to use the sphere; for in Mr. Laughton's address he remarks, "The sphere as a pressure-plate at the end of a swinging rod had been suggested, and possibly used, many years before Mr. Howlett's time, as a rude anemoscope. It is mentioned vaguely by Hülse (*Allgemeine maschinen encyclopädie*, under anemometer) in 1841, and is said by Mr. Bender (*Proc. inst. civil engineers*, March 14, 1882) to have been used by Parrot; but this I have not been able to verify." G. J. SYMONS, F.R.S.

62 Camden Square, London N.W.,
May 19, 1883.

SCIENCE AND RELIGION.

Studies in science and religion. By G. FREDERICK WRIGHT. Andover, *Draper*, 1882. 16+390 p. 16°.

WE hail the appearance of a book on this subject by one who is an earnest worker in both theology and science as a sign that the unnatural conflict between these two great departments of thought will speedily abate, and their differences be adjusted on a rational basis. The conflict is, in our opinion, the